CHAPTER IX:

STAIRWAY VARIATIONS

TIMBER STAIRCASES

A. General Description

Staircases composed of timber steps may be cost effective alternatives to concrete when working with a launch site along a steep shoreline. Timber can be easily cut and shaped to meet site specifications and may be built into a steep shoreline in a variety of manners, depending on a site's needs. For example, timbers cut into rectangular or cylindrical piece could be installed from the bottom of a slope upwards, stacked one upon another, in order to reinforce an eroding slope.

B. Materials

- Timber, typically pressure treated; *see Chapter V for information on using treated wood*
- Reinforcement bars, rebar
- Soil, gravel, or "roadbase" (mixture of rough soil and class 6 gravel), used as fill
- Retaining walls, rip-rap (as needed)

C. Design specifications/variations

- Stairs may be constructed as boxes built on top of one another, ascending a slope, to help reinforce an eroding bank
- The launch area at the base of the stairs needs protection from excessive currents in order to prevent undercutting; large rocks or a vegetative buffer may be used
- Launch area at base of stairs should provide consistent access to the water, during changing water levels; surface should be sturdy and able to withstand varying flows
- Handrails are most effective when they are 24" to 32" above the height of the steps; it is important that they not be too high or low for paddlers to be able to use

D. Advantages

- Allows paddlers easier access from a steep or eroding shoreline
- Aesthetically pleasing; less disruptive to "natural" shoreline than concrete
- May be easily and inexpensively repaired, if damaged

E. Disadvantages

- Installation may be costly and may require alteration to shoreline
- May be susceptible to undercutting
- May require maintenance as stairs age and weather

F. Case examples, designs, photos

1) Fisherman's Bridge, Arkansas River, Salida, Colorado

Problem: The slope at this popular raft and kayak launch site is very steep and vulnerable to erosion. In order to access the river, paddlers had to slide down the bank, which contributed to erosion problems.

Solution: A 15 foot-wide timber staircase, with a metal slide for rafts and boats, was installed into the slope. Parallel metal bars running down the center of the staircase provide allow paddlers and rafters to slide boats and rafts to the water below.

Construction of the staircase was designed to maximize bank stabilization. Each stair level consists of a timber box filled with "roadbase," a mixture of rough soil and class 6 gravel. Boulders placed around the launch area, at the base of the staircase, provide protection from undercutting.

Photo by Caroline Wolf

Photo 9A: Timber stairs and metal boat slide facilitate access from a steep bank

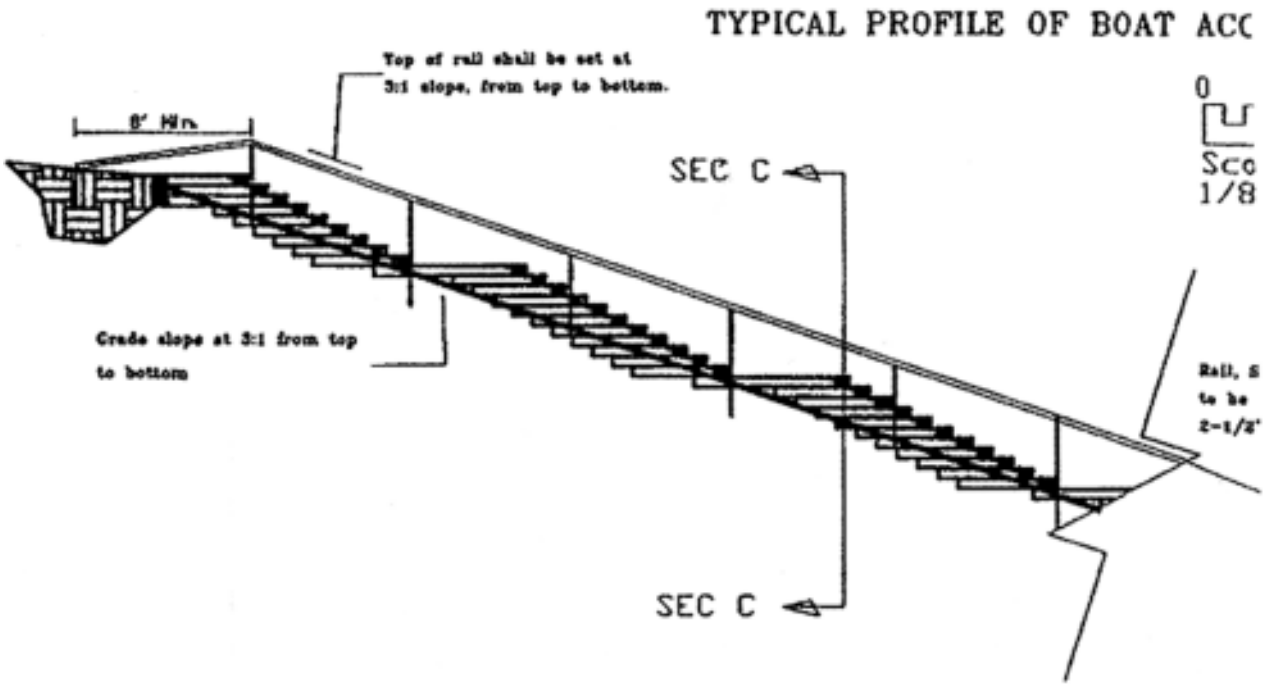
Photo by Caroline Wolf

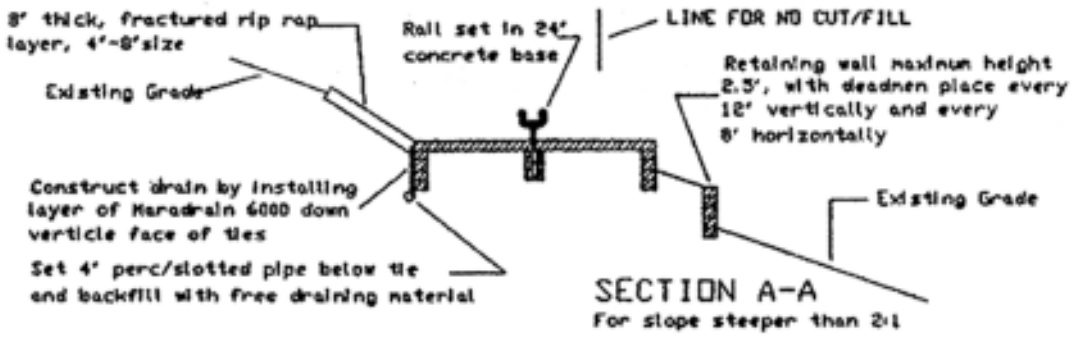
Photos 9B, 9C: Two views of staircase at Fisherman's Bridge from the river

Photo courtesy of Arkansas Headwaters Recreation Area

Diagram 9A: Design for Fisherman's Bridge (Page 1 of 2)

Courtesy of Arkansas Headwaters Recreation Area





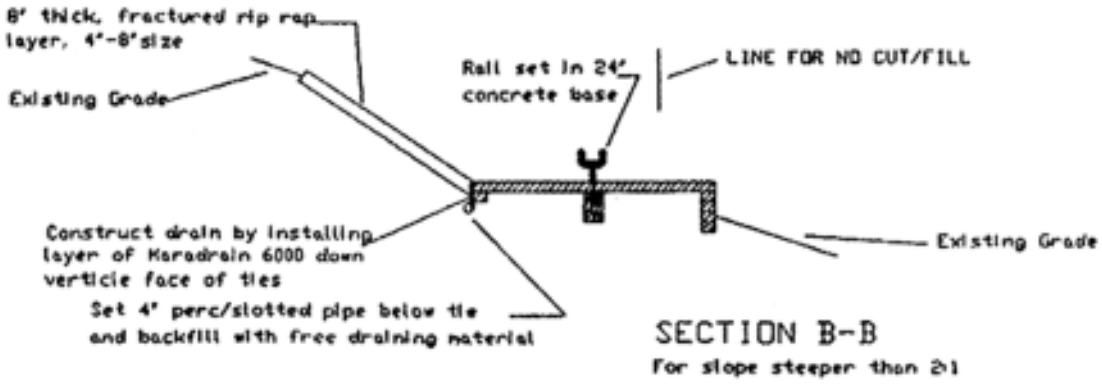
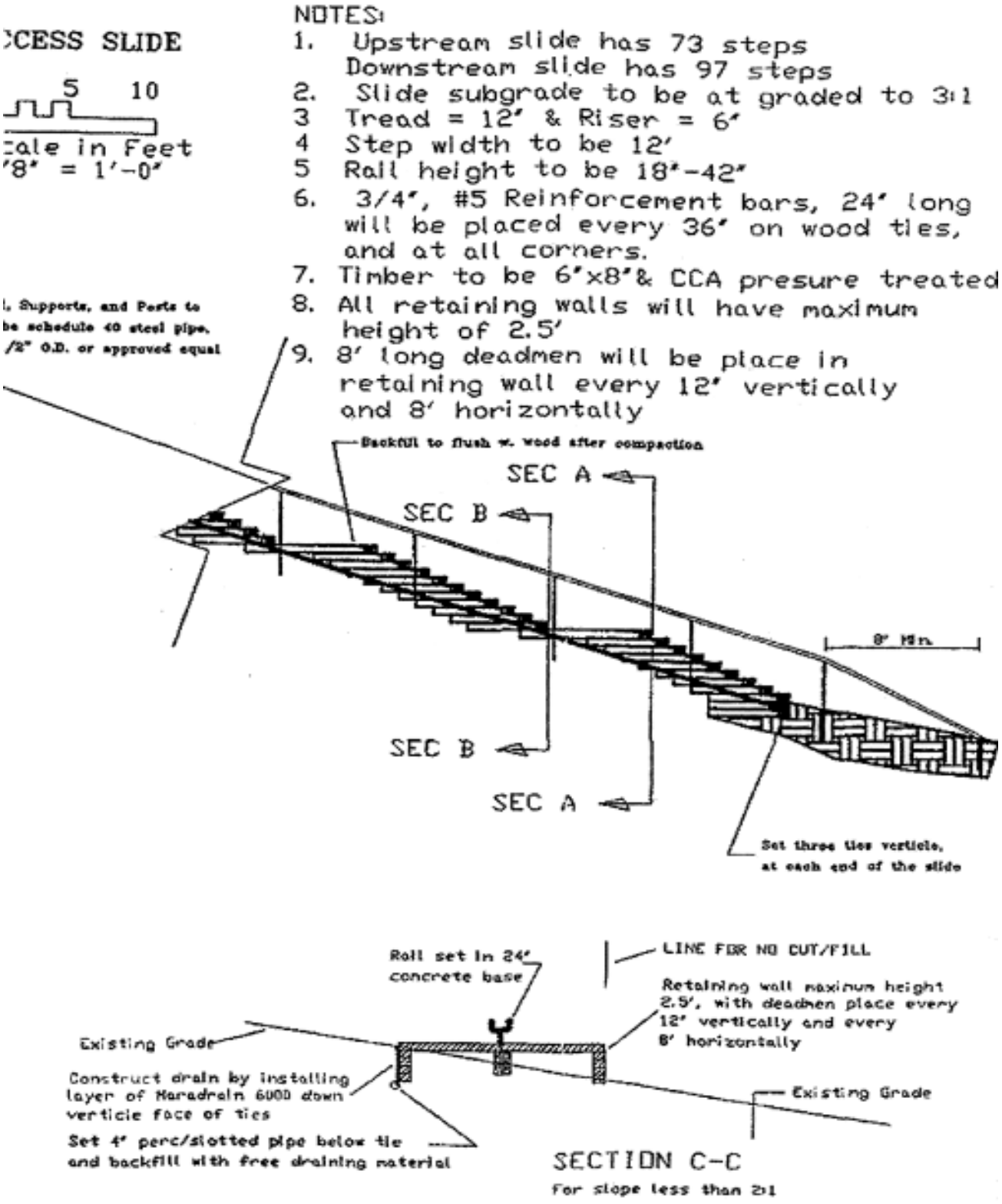


Diagram 9B: Design for Fisherman's Bridge, continued (Page 2 of 2)

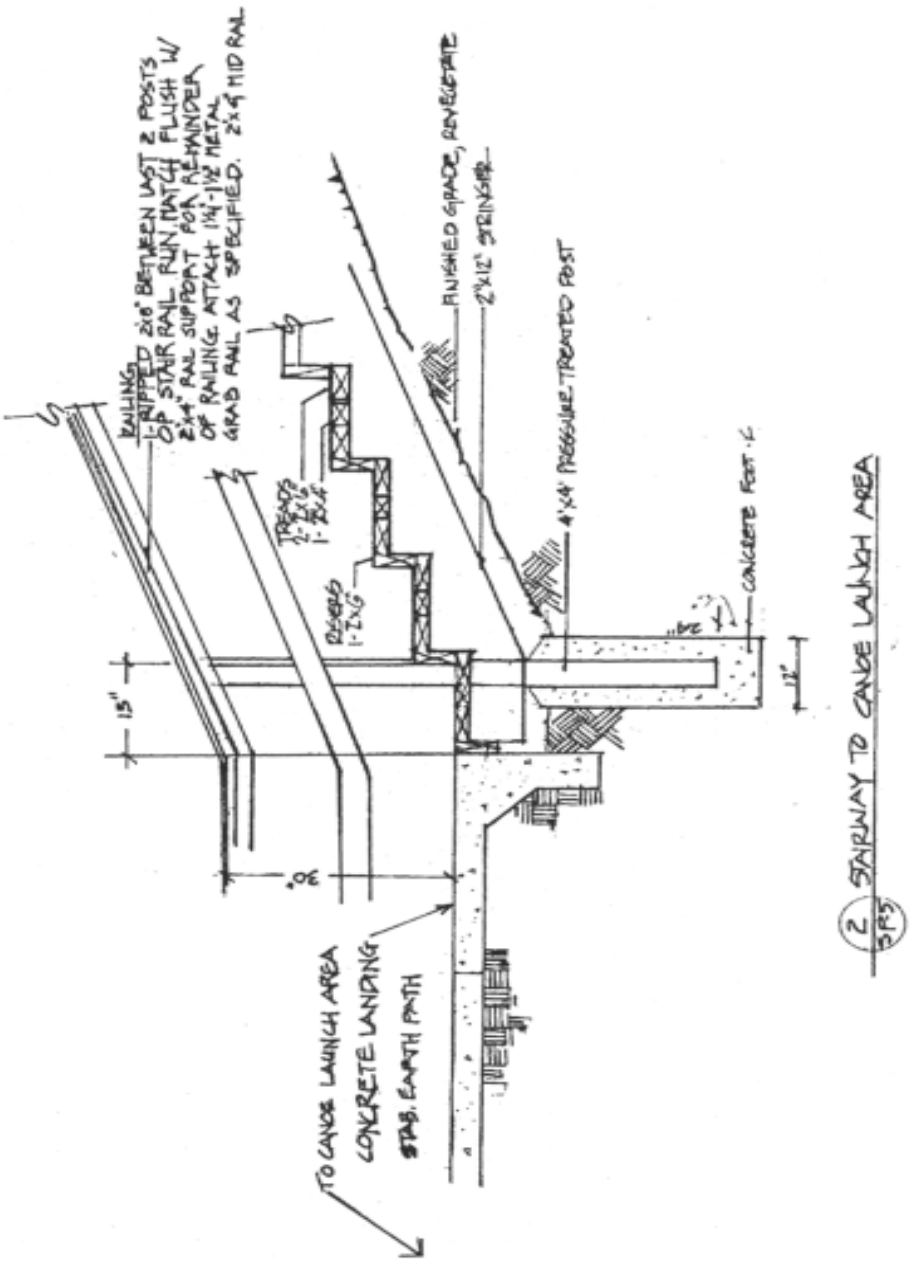
Courtesy of Arkansas Headwaters Recreation Area



2) Concept drawings for White Rock Park, Colorado River, La Grange, Texas

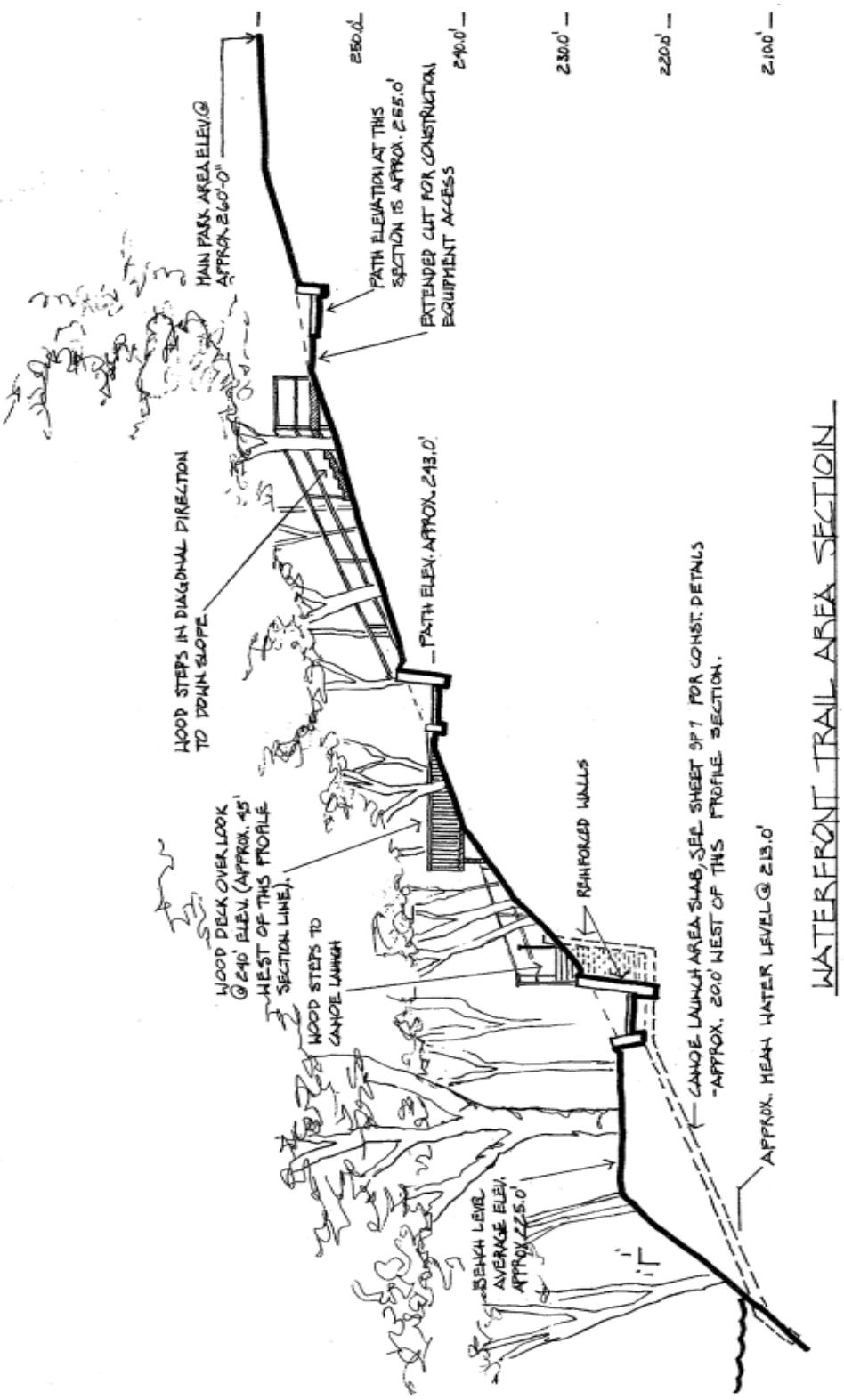
This staircase leading to a canoe launch below a 40' cutback along the Colorado River was never constructed. However, the following designs for the staircase offer an effective solution to providing access along an extremely steep bank.

Diagram 9C: Section view of proposed staircase to canoe launch area
Concept drawing for White Rock Park



Design courtesy of Diana Steinbrook, Winterowd Associates

Diagram 9D: Section elevation of staircase leading to canoe launch
Concept drawing for White Rock Park



Design courtesy of Diana Steinbrook, Winterowd Associates

3) Jump Rock launch site, Arkansas River, Salida, Colorado

Jump Rock, another site along the Arkansas River, has a stairway constructed of 8" x 8" x 8' treated timbers. On the steeper part of the hill the timbers are placed close together with the tread and rise at 8" in some areas. As the hill becomes less steep, the tread increases but the rise remains at 8" in order to reduce erosion and need for maintenance. At the top of the hill, where it is least steep, the tread and rise decrease to the point where the top few stairs are relatively shallow.

Photo courtesy of Arkansas Headwaters Recreation Area

Photo 9D: Rectangular timber stairs with varying treads provide access to steep shoreline while helping to mitigate erosion

4) Thompson River, British Columbia

Photo courtesy of Thomas O'Keefe

Photo 9E: Rounded timbers serve as staircase for paddlers

ROCK STAIRCASES

1) Rock steps at Whitechuck launch, Sauk River, Washington

Photos 9F, 9G: Rock staircase provides river access with a "natural" appearance

Photos courtesy of Thomas O'Keefe

2) Rock steps at Parkdale launch, Arkansas River, Salida, Colorado

Photo courtesy of Arkansas Headwaters Recreation Area

Photo 9H: Rock staircase reinforced with rip-rap form a simple staircase to launch area